

Amendments to the Drawings:

The attached replacement drawing sheets make changes to Figs. 4 and 5 and replace the original sheets with Figs. 4 and 5.

Attachment: Replacement Sheets (2)

REMARKS

Claims 1-4, 6-10 and 12-18 are pending in this application. By this Amendment, claims 1-4, 6-10, 12, 14 and 16 are amended, and claims 17 and 18 are added. No new matter is added. Claims 5 and 11 are canceled without prejudice to, or disclaimer of, the subject matter recited in those claims. Reconsideration of this application is respectfully requested.

I. Amendments to Claims

Claim 1 is amended to include the features of canceled claim 5, and claim 7 is amended to include the features of canceled claim 11. Claims 1 and 7 are further amended to recite a "measured first operating parameter" and a "measured second operating parameter." Support for these features may be found throughout the original specification and claims. For example, specific support may be found in the original specification at least at page 5, lines 4-27 and Fig. 6.

Claims 2-4, 6, 8-10, 12, 14 and 16 are amended for clarity and consistency with amended claims 1 and 7.

New claims 17 and 18 are directed to an embodiment described in the specification at least with respect to Fig. 6 at page 5, lines 4-27.

II. Amendments to Drawings

Fig. 4 and Fig. 5, are amended to show that the input to disturbance compensation unit 10 originates from a measured second operating parameter of the controlled apparatus. Support for the amended claims and amended figures may be found in the original specification at least at page 4, line 5 through page 5, line 3.

III. §102(b) Rejection of Claims 1-3, 5, 7-9, 11 and 13-16

Claims 1-3, 5, 7-9, 11 and 13-16 are rejected under 35 U.S.C. §102(b) as unpatentable over U.S. Patent 3,856,034 to Itoh ("Itoh"). This rejection is respectfully traversed.

Independent claim 1 recites a control system for supplying a control signal to a controlled apparatus that includes, among other features, an error generator that produces an error signal from a feedback value relating to a measured first operating parameter of a controlled apparatus, and a required value relating to a desired first operating parameter value of the controlled apparatus, and a disturbance compensator that receives an input value relating to a measured second operating parameter of the controlled apparatus, receives the error signal, produces a compensated error signal based on the input value and the error signal, and provides the compensated error signal to the gain selector.

Support for the above features may be found throughout the original specification and claims. For example, specific support may be found in the original specification at least at page 2, line 21 through page 3, line 8; page 4, lines 15-31; page 5, lines 1-27; page 6, lines 20-23; page 6, lines 4-27; and Fig. 5 and Fig. 6. Itoh does not teach or suggest such features.

As recited in claim 1 of the present application, and as described in the original specification at least at page 4, line 5 through page 5, line 3 with respect to Figs. 4 and 5, the recited control system receives two separate values related to the operation of the controlled apparatus: (1) a feedback value relating to measured first operating parameter of a controlled apparatus; and (2) an input value relating to a measured second operating parameter of the controlled apparatus.

For example, the error generator produces an error signal from the feedback value relating to a measured first operating parameter of a controlled apparatus and a required value relating to a desired first operating parameter value of the controlled apparatus. The disturbance compensator produces a compensated error signal based on an input value

relating to a measured second operating parameter of the controlled apparatus and the error signal produced by the error generator.

A. Assertion by Advisory Action Regarding Itoh is Incorrect

The Office Action asserts, at page 4, lines 9-16, with respect to canceled claim 5, the content of which has been incorporated into amended claim 1, that Itoh teaches the disturbance compensator recited in claim 1. Specifically, the Office Action asserts that the described feedback control loop with a cascade compensator configuration corresponds to the claimed disturbance compensator described in Itoh with respect to Fig. 1, because the described feedback control loop is operable to receive an input value relating to at least one other parameter value of the controlled apparatus, and to receive the error signal, and to produce a compensated error signal based on the input value and the error signal. This is incorrect.

For example, as described in Itoh at col. 3, lines 8-27, with respect to Fig. 1, the control system in Itoh receives only a single value related to the operation of the controlled apparatus, i.e., the actual value of the controllable variable X. Nowhere does Itoh make a reference to receiving "an input value relating to a measured second operating parameter of the controlled apparatus. . . ," and, therefore, Itoh cannot reasonably be considered to teach or suggest a disturbance compensator that produces a compensated error signal based on the input value (relating to a measured second operating parameter of the controlled apparatus) and the error signal, and provides the compensated error signal to the gain selector, as recited in claim 1.

B. Assertions by Advisory Action Regarding Nise are Incorrect

The Advisory Action asserts that a cascade controller, as taught in Itoh, would inherently include a disturbance compensator, as recited in the claims. To support its assertion of inherency, the Advisory Action relies on a textbook reference written by Nise

which discloses, with respect to Fig. 7-11, a feedback control loop capable of receiving a disturbance, $D(s)$, that is combined with the output of controller $G_1(s)$ to produce what the Advisory Action asserts is a "compensated error signal" into plant $G_2(s)$.

However, as described in Nise with respect to Fig. 11 at section 7.5, paragraph 1, signal $D(s)$ is a disturbance injected onto a control signal generated by controller $G_1(s)$ and sent from $G_1(s)$ to controlled plant $G_2(s)$. The control signal with a disturbance component injected upon, as described in Nise, is not the same as the compensated error signal, recited in claim 1. For example, the compensated error signal recited claim 1 is fed to a gain selector, not the controlled plant. The gain selector uses the compensated error signal to select a gain value that is provided to the controller. The controller then generates a control signal based on the original error signal and the gain value received from the gain selector.

In addition, Nise does not describe, either in the text or any of the cited figures, that disturbance signal $D(s)$ is a measured second operating parameter of the controlled apparatus.

Therefore, Nise cannot reasonably be relied on to support the Office Action's assertion that a cascade controller, as taught in Itoh, would inherently include a disturbance compensator, as recited in claim 1, because, the asserted disturbance compensation described in Nise fails to overcome the above-described deficiency of Nise, and in no way teaches or suggests the features recited in claim 1.

Further, the Advisory Action asserts that recited "the disturbance compensator that receives an input value relating to at least one other parameter value of the controlled apparatus" does not distinguish the claim from Itoh since "another" parameter value does not have to be different from the original parameter value.

As addressed above, claims 1 and 7 are further amended to recite a "measured first operating parameter" and a "measured second operating parameter." The "measured first operating parameter" and "measured second operating parameter" are two separate signals.

C. Summary

For at least these reasons, neither Itoh nor Nise, alone or in any combination can reasonably be considered to teach, or to have suggested, the combination of all of the features positively recited in claim 1. Claim 7 includes features similar to those addressed above with respect to claim 1 and, therefore, neither Itoh nor Nise can reasonably be considered to teach, or to have suggested, the combination of all of the features positively recited in claim 7, for at least the same reasons addressed above with respect to claim 1. Additionally, claims 2-3, 5, 8-9, 11 and 13-16, and new claims 17 and 18 depend from one of independent claims 1 and 7, respectively, and, therefore, neither Itoh nor Nise can reasonably be considered to teach, or to have suggested, the combination of features recited in each of claims 2-3, 5, 8-9, 11 and 13-18, for at least the same reasons addressed above with respect to claim 1 and 7, as well as for the additional features recited in each of claims 2-3, 5, 8-9, 11 and 13-18.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-3, 5, 7-9, 11 and 13-18 under 35 U.S.C. §102(b) as being unpatentable over Itoh with reliance on Nise are respectfully requested.

IV. §103 Rejection of Claims 4 and 10

The Office Action rejects claims 4 and 10 under 35 U.S.C. §103(a) as unpatentable over Itoh in view of U.K. Patent 1,135,508, referred to in the Office Action as "IBM." This rejection is respectfully traversed.

Claims 4 and 10 depend from claims 1 and 7, respectively. IBM fails to overcome the above-described deficiency of Itoh with respect to claims 1 and 7. Therefore, the asserted combination of Itoh and IBM does not teach or suggest the combinations of features recited in claims 1 and 7.

For at least these reasons, it is respectfully submitted that the Itoh/IBM combination cannot reasonably be considered to teach, or to have suggested, the combinations of features in claims 4 and 10 for at least the reasons discussed above with respect to claims 1 and 7, as well as for additional features claims 4 and 10 recite.

Accordingly, reconsideration and withdrawal of the rejection of claims 4 and 10 under 35 U.S.C. §103(a) as being unpatentable over the Itoh/IBM combination are respectfully requested.

V. §103 Rejection of Claims 6 and 12

The Office Action rejects claims 6 and 12 under 35 U.S.C. §103(a) as unpatentable over Itoh in view of U.S. Patent 4,439,868 to Brown ("Brown"). This rejection is respectfully traversed.

Claims 6 and 12 depend from claims 1 and 7, respectively. Brown fails to overcome the above-described deficiency of Itoh with respect to claims 1 and 7. Therefore, the asserted combination of Itoh and Brown does not teach or suggest the combinations of features recited in claims 1 and 7.

For at least these reasons, it is respectfully submitted that the Itoh/Brown combination cannot reasonably be considered to teach, or to have suggested, the combinations of features in claims 6 and 12 for at least the reasons discussed above with respect to claims 1 and 7, as well as for additional features claims 6 and 12 recite.

Accordingly, reconsideration and withdrawal of the rejection of claims 6 and 12 under 35 U.S.C. §103(a) as being unpatentable over the Itoh/Brown combination are respectfully requested.

VI. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:JMH/jam

Attachments:

Request for Continued Examination
Petition for Extension of Time
Replacement Drawing Sheets (2)

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